Special

Phytoplankton Productivity in the Vicinity of a Front S.W. of the Azores during May 1981

B. Irwin, T. Platt, P. Lindley, M.J. Fasham, and K. Jones

Published by:

Marine Ecology Laboratory Ocean Science and Surveys, Atlantic Department of Fisheries and Oceans

Bedford Institute of Oceanography P.O. Box 1006 Dartmouth, Nova Scotia B2Y 4A2

June 1983

Canadian Data Report of Fisheries and Aquatic Sciences No. 400

Canadian Data Report of Fisheries and Aquatic Sciences

These reports provide a medium for filing and archiving data compilations where little or no analysis is included. Such compilations commonly will have been prepared in support of other journal publications or reports. The subject matter of Data Reports reflects the broad interests and policies of the Department of Fisheries and Oceans, namely, fisheries management, technology and development, ocean sciences, and aquatic environments relevant to Canada.

Numbers 1-25 in this series were issued as Fisheries and Marine Service Data Records. Numbers 26-160 were issued as Department of Fisheries and the Environment, Fisheries and Marine Service Data Reports. The current series name was changed with report number 161.

Data Reports are not intended for general distribution and the contents must not be referred to in other publications without prior written clearance from the issuing establishment. The correct citation appears above the abstract of each report.

Rapport statistique canadien des sciences halieutiques et aquatiques

Ces rapports servent de base à la compilation des données de classement et d'archives pour lesquelles il y a peu ou point d'analyse. Cette compilation aura d'ordinaire été préparée pour appuyer d'autres publications ou rapports. Les sujets des Rapports statistiques reflètent la vaste gamme des intérêts et politiques du Ministère des Pêches et des Océans, notamment gestion des pêches, techniques et développement, sciences océaniques et environnements aquatiques, au Canada.

Les numéros 1 à 25 de cette série ont été publiés à titre de Records statistiques, Service des pêches et de la mer. Les numéros 26-160 ont été publiés à titre de Rapports statistiques du Service des pêches et de la mer, Ministère des Pêches et de l'Environnement. Le nom de la série a été modifié à partir du numéro 161.

Les Rapports statistiques ne sont pas préparés pour une vaste distribution et leur contenu ne doit pas être mentionné dans une publication sans autorisation écrite préalable de l'établissement auteur. Le titre exact paraît au haut du résumé de chaque rapport.

Canadian Data Report Fisheries and Aquatic Sciences No. 400

PHYTOPLANKTON PRODUCTIVITY IN THE VICINITY

OF A FRONT S.W. OF THE AZORES DURING MAY 1981

by

B. Irwin, T. Platt, P. Lindley M.J. Fasham and K. Jones²

Marine Ecology Laboratory Ocean and Aquatic Sciences, Atlantic Department of Fisheries and Oceans

Bedford Institute of Oceanography
Dartmouth, Nova Scotia
B2Y 4A2

This is the nineteenth Data Report from the Marine Ecology Laboratory,
Dartmouth.

¹ Institute of Oceanographic Sciences Brook Road, Wormley Surrey, England GU8 5UB U.K.

² Scottish Marine Biological Association Dunstaffenage Marine Laboratory Oban, Scotland

• Minister of Supply and Services Canada 1983

Cat. No. Fs 97-13/400

ISSN 0706-6465

Correct citation for this publication:

Irwin, B., T. Platt, P. Lindley, M.J. Fasham and K. Jones. 1983.

Phytoplankton productivity in the vicinity of a front, S.W. of the Azores during May 1981. Can. Data Rept. Fish. Aquat. Sci. No. 400: 101 p.

CONTENTS

	Page
ABSTRACT/RÉSUMÉ	. iv
INTRODUCTION	. 1
Sampling	. 1
Size Fractionation	_
METHODS	. 2
Primary Productivity Organic Particulates	. 2
Nutrients	. 3
Photosynthetic Parameters	
ACKNOWLEDGEMENTS	. 4
REFERENCES	. 4
TABLE LEGEND	. 5
TEMPERATURE, SALINITY, CHLOROPHYLL AND NUTRIENT PROFILES .	. 7
TABLE LEGEND	. 13
LIGHT SATURATION DATA AND RELATED BIOMASS AND NUTRIENT MEASUREMENTS	. 15

ABSTRACT

Irwin, B., T. Platt, P. Lindley, M.J. Fasham and K. Jones. 1983.

Phytoplankton productivity in the vicinity of a front, S.W. of the Azores during May 1981. Can. Data Rept. Fish. Aquat. Sci. No. 400: 101 p.

During the period May 9 to May 30, 1981, a series of primary production experiments and related nutrient measurements were made on RRS Discovery in the vicinity of a front SW of the Azores. In this report we make available the raw data and the fitted light saturation parameters.

RESUME

Irwin, B., T. Platt, P. Lindley, M.J. Fasham and K. Jones. 1983.

Phytoplankton productivity in the vicinity of a front, S.W. of the

Azores during May 1981. Can. Data Rept. Fish. Aquat. Sci. No.

400: 101 p.

Durant la période du 9 mai au 30 mai 1981, des séries d'expériences sur la determination de la production primaire et des sels nutritifs furent réalisées au bord du RRS Discovery du côte d'un front à S.O. des Azores. Nous présentons dans ce rapport les données brutes sur ces expériences, ainsi que les paramètres qui furent calculées pour représenter les courbes de production en fonction de la lumière.

This is the first in a series of data reports presenting the results of photosynthesis experiments on natural phytoplankton populations in the oligotrophic sub-tropical waters of the North Atlantic. In this study, water samples were collected from RRS Discovery in the vicinity of a front, SW of the Azores. This front separates East Atlantic from West Atlantic waters.

This was a joint effort between the Biological Oceanography
Division of the Marine Ecology Laboratory, IOS, Wormley, England and SMBA,
Dunstaffenage Marine Laboratory, Oban, Scotland.

In this report we make available the results of these experiments, the fitted light saturation parameters and their confidence intervals to the light saturation curves, and the values of some relevant biomass and nutrient concentrations.

Sampling

Water samples for light saturation experiments were collected with 30 % niskin bottles or from the non-toxic pumped sea water supply in the ship's laboratory. The majority of the samples were collected from the chlorophyll maximum layer which was located between 40 and 110 m below the surface. The depth of the chlorophyll maximum was determined by in situ fluorometry (Aquatraka, Chelsea Environmental Instruments Ltd.). The fluorometer was mounted on a rosette sampler and lowered into the region of maximum fluorescence. 30 % niskin bottles were then used to collect water samples from that depth.

1.8 & Niskin bottles fitted with reversing thermometer racks were used to collect samples from standard oceanographic depths for chlorophyll, salinity, temperature and nitrate concentrations.

Size Fractionation

Most samples collected for light saturation experiments were separated into two size fractions. The whole fraction was collected by filtering unscreened water onto Whatman GF/F filters. The picoplankton fraction (<1µm size) was that fraction of the whole population that passed through a 1.0µm nuclepore filter at a negative pressure of 10 K pa. and was collected on a Whatman GF/F filter.

METHODS

Primary Productivity

The ¹⁴C method as described in Strickland and Parsons (1972) was used. Sufficient sodium bicarbonate ¹⁴C was added to 6-8 liters of water to yield an activity of 10-15 µ ci per 100 mls of sample. 100 ml aliquots were then measured into 125 ml pyrex bottles. A total of 120 light and 8 dark bottles were filled for each experiment. 30 light and 2 dark bottles were placed into each incubation chamber. The temperature of each incubation chamber was controlled by pumping water from a temperature controlled water bath (Forma Scientific Model 2160). Illumination was provided by 2000 watt tungsten-halogen lamps (New Haline OHS 2000).

All samples were kept in the dark at incubation temperature for one hour prior to lights being switched on. Incubations were terminated after 3 hours and samples were immediately filtered then stored at -20°C for later counting in a scintillation counter.

In experiments where two size fractions were examined, 15 light and 1 dark bottle from each size class was placed in each incubator.

Organic Particulates

Samples for organic particulates were collected and analyzed as described in Irwin et al. (1982). All samples except chlorophylls for profile stations were frozen at -20°C and later analyzed in the laboratory. Profile chlorophylls were analyzed immediately after collection.

Nutrients

Profile nitrates were measured manually on board ship using the method described by Strickland and Parsons (1972). All other nutrients were stored at -20°C for later analysis using methods described in Irwin et al. (1982).

Photosynthetic Parameters

Measurements of specific production, P^B , and irradiance, I, were used to estimate the parameters in the equation

$$P^{B} = P_{s}(1 - e^{-\alpha I/P}s)e^{-\beta I/P}s$$

(Platt et al., 1981) where P_s (Mg c mg chl⁻¹h⁻¹) is the light saturated rate of specific production in the absence of photoinhibition, α (mg c [mg chl a]⁻¹h⁻¹w⁻¹m⁻²) is the initial slope of the P-I curve and β (same units as α) is a parameter that characterizes the photoinhibition. A complete discussion of the fitting routine and its mathematical basis is given in Irwin et al., 1980.

ACKNOWLEDGEMENTS

We wish to thank Dave Rudderham and Carla Caverhill for their assistance in the calculation of the light saturation parameters.

REFERENCES

- Irwin, B., T. Platt, W.G. Harrison, C.L. Gallegos and P. Lindley. 1982.

 Phytoplankton productivity and nutrient measurements in Ungava Bay

 NWT from August 1 to September 3, 1979. Can. Data Rept. Fish

 Aquat. Sci. No. 287: 208 p.
- Irwin, B., W.G. Harrison, C.L. Gallegos and T. Platt. 1980. Phytoplankton productivity experiments and nutrient measurements in the Labrador Sea, Davis Strait, Baffin Bay and Lancaster Sound from 26 August to 14 September 1978. Can. Data Rept. Fish Aquat. Sci. No. 213: 103 p.
- Platt, T., C.L. Gallegos and W.G. Harrison. 1981. Photoinhibition of photosynthesis in natural assemblages of marine phytoplankton. J. Mar. Res. 38(4): 687-701.
- Strickland, J.D.H. and T.R. Parsons. 1972. A practical handbook of seawater analysis. Bull. Fish. Res. Bd. Canada. No. 167: 311 p.

TEMPERATURE, SALINITY, CHLOROPHYLL AND NUTRIENT PROFILES



LATITUDE: 34°59.67'N LONGITUDE : 28°33.1'W

DATE: 10:05:81 STATION NO.: 10357

DEPTH M	TEMPERATURE °C	°/	CHLOROPHYLL mgm-3	PHAEOPHYTIN mgm ⁻³	NITRATE mgatm-3
10	17.86	36.22	0.04	0.02	0.47
50	17.57	36.27	0.10	0.09	0.49
75	17.10	36.21	0.25	0.45	1.38
95	16.90	36.19	0.24	0.22	0.84
100	16.72	36.17	0.10	0.09	4.35
150	15.96	36.07	0.04	0.04	1.86
200	14.88	35.97	0.00	0.01	10.16
300	13.24	35.78	0.00	0.01	8.56

LATITUDE: 32°44.4'N

LONGITUDE : 29°46'W

DATE: 11:05:81

STATION NO.: 10358

DEPTH M	TEMPERATURE °C	SALINITY °/	CHLOROPHYLL mgm-3	PHAEOPHYTIN mgm-3	NITRATE mgatm ⁻³
10	19.04	36.54	0.04	0.01	0.00
50	18.87	36.54	0.06	0.03	0.07
75	18.83	36.54	0.11	0.04	0.00
100	18.67	36.54	0.19	0.10	0.12
130	18.47	36.54	0.16	0.11	2.44
175	17.95	36.52	0.07	0.04	0.80
200	17.15	36.37	0.00	0.01	6.60
250	16.42	36.25	0.00	0.01	7.21

LATITUDE: 31°08.53'N LONGITUDE : 29°48.4'W

DATE: 12:05:81 STATION NO.: 10359

DEPTH M	TEMPERATURE °C	SALINITY */	CHLOROPHYLL mgm ⁻³	PHAEOPHYTIN mgm ⁻³	NITRATE mgatm ⁻³
10	19.34	36.56	0.05	0.01	0.17
50	18.88	36.52	0.08	0.01	0.00
75	18.59	36.52	0.13	0.01	0.10
90	18.46	36.52	0.19	0.19	0.02
115	18.40	36.52	0.25	0.17	0.54
130	18.39	36.52	0.09	0.04	0.33
200	17.39	36.37	0.01	0.01	3.39
300	16.37	36.27	0.00	0.00	6.71

LATITUDE: 33°03'N LONGITUDE : 34°24.5'W

DATE: 14:05:81

STATION NO.: 10360

DEPTH M	TEMPERATURE °C	SALINITY °/	CHLOROPHYLL mgm-3	PHAEOPHYTIN mgm ⁻³	NITRATE mgatm ⁻³
10	19.12	36.47	0.05	0.02	0.99
. 60	19.07	36.47	0.06	0.02	0.90
80	18.92	36.46	0.11	0.04	0.57
100	18.41	36.45	0.18	0.11	0.68
125	18.24	36.43	0.27	0.25	0.73
175	17.94	36.40	0.06	0.04	2.00
225	17.47	36.26	0.01	0.02	4.10
300	16.56	36.21	0.00	0.02	4.80

LATITUDE: 33°33.6'N

LONGITUDE : 33°32.1'W

DATE: 15:05:81

STATION NO.: 10362

DEPTH M	TEMPERATURE °C	°/	CHLOROPHYLL mgm ⁻³	PHAEOPHYTIN mgm ⁻³	NITRATE mgatm -3
10	17.91	36.26	0.11	0.05	1.14
40	17.78	36.28	0.16	0.08	1.81
50	17.77	36.28	0.08	0.22	1.06
56	17.47	36.34	0.24	0.12	3.16
60	17.73	36.34	0.54	0.27	1.03
70	17.25	36.29	0.36	0.26	0.42
80	17.02	36.26	0.28	0.11	3.69
90	16.97	36.26	0.19	0.09	2,93
100	16.16	36.12	0.08	0.11	3.11
125	16.16	36.12	0.05	0.05	3.68
150	16.06	36.15	0.02	0.04	5.16
175	15.69	36.11	0.00	0.01	6.44
200	15.29	36.04	0.00	0.02	7.32
250	15.03	36.03	0.00	0.02	8.16
300	14.43	35.94	0.00	0.02	9.09

LATITUDE: 34°00.1'N

LONGITUDE : 32°49.9'W

DATE: 16:05:81

STATION NO.: 10364

DEPTH M	TEMPERATURE °C	SALINITY */	CHLOROPHYLL mgm-3	PHAEOPHYTIN mgm ⁻³	NITRATE mgatm
10	18.42	36.39	0.05	0.04	0.11
30	18.40	36.38	0.07	0.04	0.22
40	18.14	36.36	0.15	0.14	0.17
50	17.23	36.25	0.35	0.39	0.37
70	16.70	36.17	0.53	0.50	2.18
80	16.62	36.17	0.13	0.15	2.51
90	16.66	36.19	0.15	0.11	3.00
100	16.54	36.18	0.08	0.10	3.30
125	16.62	36.25	0.02	0.04	6.07
150	16.09	36.15	0.01	0.03	5.44
175	15.75	36.09	0.00	0.02	6.89
200	15.04	36.01	0.00	0.02	8.61
225	14.67	35.97	0.00	0.02	9.27
250	14.27	35.92	0.00	0.03	10.70
275	14.05	35.89	0.00	0.02	10.19
300	13.71	35.84	0.00	0.02	12.12

LATITUDE: 33°31.9'N LONGITUDE : 33°32.3'W

DATE: 16:05:81 STATION NO.: 10365

DEPTH M	TEMPERATURE °C	SALINITY */	CHLOROPHYLL mgm-3	PHAEOPHYTIN mgm ⁻³	NITRATE mgatm ⁻³
20	18.37	36.37	0.06	0.02	0.24
40	17.99	36.30	0.09	0.08	0.27
50	17.76	36.26	0.08	0.04	0.25
60	17.62	36.36	0.25	0.19	2.26
75	17.37	36.32	0.13	0.07	2.84
100	17.05	36.27	0.05	0.03	2.36
160	16.67	36.25	0.02	0.03	5.18
300	14.85	36.00	0.00	0.01	9.58

LATITUDE: 32°07.2'N LONGITUDE : 27°57.8'W

DATE: 20:05:81 STATION NO.: 10368

DEPTH M	TEMPERATURE °C	SALINITY °/	CHLOROPHYLL mgm-3	PHAEOPHYTIN mgm-3	NITRATE mgatm-3
10	18.63	36.39	0.04	0.02	0.03
50	18.60	36.37	0.04	0.01	0.08
75	18.08	36.33	0.06	0.03	0.10
100	17.36	36.23	0.14	0.14	0.11
120	17.21	36.22	0.25	0.40	0.57
140	16.76	36.17	0.11	0.15	1.94
200	15.49	36.07	0.00	0.02	7.02
300	13.26	35.79	0.00	0.01	12.70

LATITUDE: 32°23.1'N LONGITUDE : 33°31.2'W

DATE: 22:05:81 STATION NO.: 10371

DEPTH M	TEMPERATURE °C	SALINITY °/	CHLOROPHYLL mgm-3	PHAEOPHYTIN mgm-3	NITRATE mgatm-3
10	19.06	36.26	0.08	0.02	0.19
40	18.18	36.32	0.07	0.02	0.71
80	17.94	36.33	0.30	0.12	0.85
100	17.69	36.33	0.24	0.21	1.55
110	17.47	36.34	0.09	0.07	3.51
160	17.15	36.35	0.04	0.01	5.46
180	17.16	36.35	0.00	0.01	5.52
300	15.38	36.08	0.00	0.01	10.28

LATITUDE: 35°21.7'N LONGITUDE : 35°28.6'W

DATE: 24:05:81 STATION NO.: 10373

DEPTH M	TEMPERATURE °C	SALINITY °/	CHLOROPHYLL mgm-3	PHAEOPHYTIN mgm-3	NITRATE mgatm-3
25	17.46	36.13	0.15	0.03	0.15
50	17.22	36.12	0.22	0.05	0.22
70	16.74	36.07	0.26	0.17	0.20
85	16.69	36.12	0.29	0.21	0.68
110	16.34	36.12	0.16	0.11	2.44
150	15.98	36.10	0.05	0.05	3.39
200	15.08	35.98	0.01	0.03	6.90
300	13.89	35.86	0.00	0.01	10.71

LATITUDE: 33°34.2'N LONGITUDE : 33°28'W

DATE: 26:05:81 STATION NO.: 10376

DEPTH M	TEMPERATURE °C	SALINITY °/	CHLOROPHYLL mgm-3	PHAEOPHYTIN mgm ⁻³	NITRATE mgatm ⁻³
15	19.86	36.62	0.04	0.02	0.03
35	18.86	36.54	0.11	0.05	0.09
45	18.32	36.48	0.54	0.27	0.62
60	17.93	36.45	0.07	0.35	2.95
90	17.45	36.38	0.06	0.05	3.73
160	16.88	36.30	0.00	0.01	4.06
240	15.76	35.15	0.00	0.01	6.94
300	14.83	36.00	0.00	0.01	18.34

LIGHT SATURATION DATA AND RELATED BIOMASS AND NUTRIENT MEASUREMENTS

Units

$$P = mg \ C \ m^{-3}h^{-1}(mg \ Ch1)^{-1}$$

$$I = W m^{-2}$$

$$P_s = mg \ C \ mg \ Chl^{-1}h^{-1}$$

$$\alpha = mg \ C(mg \ Ch1)^{-1}h^{-1}W^{-1}m^{-2}$$

$$\beta = mg \ C(mg \ Ch1)^{-1}h^{-1}W^{-1}m^{-2}$$

Organic particulate concentrations are in mg m⁻³ and nutrients are in mg at m⁻³. The 90% confidence interval for P_s , α and β are shown in the closed brackets below the estimates for each parameter.

	T 34 59.7° TF 10/05/8		LONG 28 3	3.1'W	STATI	ON NO. 103 TH 75		
Ţ	Р	I	Р	1	р	I	Р	
791	.04	740	.14	587	.14	493	.17	
472	.34	234	.27	189	.34	164	. 41	
113	.33	81	. 37	25	. 36	24	. 36	
17	.37	8	.34					

	•			PAR	AMETE	R VALUES				
P5 :		.39		ALP	HA :	-	BETA	t	.0005	
	37,	. 42)	(- ,	-)	(.00	04,	.0007)	1
SAMPLE TEM	PERA	TURE	18.0	C		INCUBA	TION TEMPERATU	RE	13.8 C	
CHLOROPHYLL	t	. 59		RNA	1	3.37	AMMONIA	ı	.29	
CARRON	:	PA		DNA	:	4.47	NITRATE	1	2.70	
NITROGEN	ŧ	27		PRITE	TNI	15.72	SILICATE	1	1.03	

DISCOVERY 1981

	T 34 59.71 TF 10/05/8		LONG 28 33.1°W			STATION NO. 10357 DEPTH 75 M			
Ţ	Р	J	р	I	Р	I	Р		
822	.25	740	.18	575	.28	559	.17		
472	• 36	431	.22	230	. 39	176	. 46		
166	.54	137	• 51	108	.69	8 4	.67		
69	.70	32	.52	19	. 44	16	.40		
13	.41	7	.20	7	.29				

PS: .75 ALPHA: .039	. BETA :	.0015
(.70, .81) (.034, .044)	(.0012,	.0018 1
SAMPLE TEMPERATURE 18.0 C INCUBATION	ON TEMPERATURE	16.5 C
CHLOROPHYLL: .59 RNA : 3.37	AMMONIA :	.29
CARRON : 88 DNA : 4.47	NITRATE :	2.70
NITROGEN : 27 PROTEIN: 15.72	SILICATE :	1.03

-/T

DISCOVERY 1981

	ON NO. 10357 TH 75 N	DEP	3.1'W	LONG 28 3		T 34 59.71N	
P	Ī.	P	1	Р	Ī	P	I
.21	637	.21	727	.12	789	.14	93P
.21	263	.23	374	.20	419	.15	575
. 32	125	. 33	143	.36	180	.31	201
.42	39	.42	76	.38	88	.40	98
.15	13	.27	15	.34	23	.32	26
		.12	5	.10	5	.14	Я

PAR	AM	FT	FR 1	VAI	UFS

95 1		.44		AL	PHA 1	.024	BETA	1	.0007
(.	41,	.45)	(.021,	.027)	(.0	006,	.0008
SAMPLE TEM	PERAT	URE	18.0	С		INCUBATIO	N TEMPERATI	URF	23.5 C
CHLORCPHYLL	1	. 59		RNA	1	3.37	AMMONIA	t	.29
CARRON	:	88		DNA	t	4.47	NITRATE	:	2.70
NITROGEN	ı	27		PROT	ETN:	15.72	SILICATE	t	1.03

DISCOVERY 1981

	LAT 34 59.7'N DATE 10/05/81		LONG 28 3	3.1'W	STATION NO. 10357 DEPTH 75 M			
I	p	I	р	I	Р	Ţ	P	
842	.19	637	• 30	616	.19	493	.24	
485	.27	281	.29	238	. 38	185	.36	
152	.43	135	. 42	108	. 42	94	. 49	
85	.52	58	.42	53	. 41	33	.43	
25	.32	21	.33	13	.19	13	.31	
8	.20	9	.16					

ALPHA 1. .025

BETA : .0007

(•	48,	.54	,	•	.022,	.028)	(.0005,	.0008
SAMPLE	TEM	PFRA	TURE	18.0	С		INCURATIO	N TEMPER	ATURE	20.3 C
CHLOROPH	IYLL	1	.59		RNA	1	3.37	AMMONIA	1	.29
CARBON		1	88		DNA	t	4.47	NTTRATE	1	2.70
NITROGEN	1	:	27		PROT	ETN:	15.72	STLICAT	E :	1.03

P5 1

.51

DISCOVERY 1981

	T 72 44.41				DEP	14 100	M
1	р	Ť	Р	I	Р		p
363	.14	781	•15	740	.12	472	.17
234	.14	149	.21	164	.17	152	.22
[13	.19	113	.26	81	.28	78	.26
47	.2?	43	.25	25	. 29	24	.25
17	.23	17	.13	8	. 06	8	.17
4	.09						

		PARAMETER VALUES		
06 :	. 25	AL PHA : .023	SFTA :	.0002
. 24,	.27)	(.016, .028)	(.0001.	.0003 1
CAMPLE TEMPERA	TURE 19.0 C	LNCURATION	TEMPERATURE	14.9 0

CAFUSUBAALI	:	. 4 ^E	RMA	:	.64	AMMONTA	:	.32
LVSdUN	:	161	DNA	:	2.61	NTTRATE		.31
NITERCEN	1	21	PROTE	TNI	12.63	STLICATE	1	1.15

DISCUNERY TOBI

	T 32 44.41		I ANG 29 4	6.0°W	STATION NO. 10359 DEPTH 100 M		
T	p	Ţ	p	ī	p	1	P
922	.06	740	.06	575	.05	559	.09
472	.04	431	.08	230	.07	176	.11
166	.06	137	.07	108	.09	84	.07
49	•11	39	.11	19	.10	16	.10
13	.09	7	.09	7	.08	5	.03
4	.04						

ALPHA : .017

ps : .10

3ETA 1 .0001

٠.	ng,	.11)	(.013.	.022)	(.1001.	.0001
CAMPLE TEM	DERA	TURE	10.0 0			TNCUBATIO	N TEMPER	ATUPE	27.2 C
CHI US DOMAFT	1	. 45	RM	۸۱	1	. + 4	AMMONTA	1	.32
(V 5 5 U Vi	:	1 11 1	חמ	A	:	2.61	NITRATE	:	.31
MITDUGEN	:	21	PR	nT	FIN:	12.63	STLICAT	F t	1.15

DISCOVERY 1981

LAT 32 44.41N DATE 11/05/81			LANG 29 4	5.0 W	STATION NO. 10358 DEPTH 100 M		
1	р	Ţ	р	I	P	Ţ	P
878	.04	789	.00	727	.05	637	.08
616	.05	575	.07	419	.11	374	.08
201	.12	180	.11	143	.10	125	.10
98	.16	88	.13	47	.15	39	.16
26	.10	23	.09	15	.12	13	.07
8	.09	6	.06	5	.08	5	.08

PS: .15 ALPHA: .012 BETA: .0002

	14,	.16	1	(.010,	.015)	(.0002.	.0003
SAMPLE TEM	PER	ATURF	19.0	С		INCUBATIO	N TEMPER	ATURE	24.5 C
CHEURUBHAFF	:	. 4 E		RNA	1	.64	AMMONIA		.32
CARBON	1	191		DNA	1	2.61	NITRATE	t	.31
NITROCEN	:	21		PROT	ETN:	12.63	SILICAT	E :	1.15

		32 44			LONG	29 46	.0'W		ON NO. 1	
J		Р		ī	p		I	Р	I	Р
962		.06		904	• 05		842	.04	645	.05
637		.09		016	.06	,	493	.08	485	.09
281		.14		238	12		185	.15	152	.17
135		.18		108	.19		94	. 15	85	.16
FR		.18		53	.17		38	.16	33	.18
25		.16		13	.14	•	13	.17	8	.13
					PARA	METER	VALUES			
	20	t	.18		ALPH	1A :	-	36	TA 1	.0002
	(.17,	.18)	(- ,	-)	. (.0002,	.0003)
AMPL	FTE	MPERA	TURE	19.0	С		INCURAT	ION TEMPER	ATURE	20.8 C
								AMMONIA		

DNA : 2.61

12.63

PROTEINE

NTTRATE : .31

SILICATE : 1.15

CARBON

NITRHEEN

: 181

: 21

DISCOVERY 1981

LAT 31 08.5*N DATE 12/05/81			LING 29 4	9.41W	STATION NO. 10359 DEPTH 30 M		
ī	p	1	Р	1	Р	1	P
952	.00	904	.09	842	.22	645	•42
616	.53	403	.31	485	. 56	281	. 42
185	.40	15?	. 53	108	.61	94	. 58
EB	.38	53	.56	38	• 56	33	.35
25	. 38	21	. 48	13	.24	13	.21
P	.40	8	.11				

				PA	RAMETE	K ANTOF?				
20	1	.62		AL	PHA 1	.027	BETA	1	.0007	
(.54,	•71)	(.020,	.033)	(.00	04,	.0010)	
SAMPLE TE	MPERA	TURF	20.0	С		INCURATION	I TEMPERATU	RF	21.0 C	
CHEOBUDHAF	1 :	.06		RNA	1	.80	AINCHMA	1	.26	>
CARBUN	:	146		NNA	:	2.46	NITRATE	:	.13	
NITROCEN	:	19		PROT	FTN:	21.05	STITCATE		1.22	

DISCOVERY 1981

	LAT 31 08.5'N DATE 12/05/81			0.4°W	STATION NO. 10359 DEPTH 75 M			
I	Р	Ī	p	1	p	ī	P	
822	.06	740	.08	575	.09	559	.06	
472	.11	431	.13	230	.18	176	.23	
166	.21	108	.22	84	.24	39	.21	
32	.23	21	.22	16	.16	13	.19	
7	.14	7	.18	5	.06	4	.06	

P5 :	,	.27		AL	PHA :	.022	BETA	1	.0005
(.:	25,	.29)	(.019,	.025)	(.00	304,	.0006)
SAMPLE TEM	PERA	TURE	19.0	c		INCUBA	TION TEMPERAT	18 E	19.8 C
CHLOROPHYLL	:	.44		RNA	:	1.84	AMMONTA	1	.36
CARRON.	:	132		DNA	1	3.10	NITRATE	1	.11
NITROGEN	1	26		PROT	EIN:	15.15	SILICATE		.94

DISCOVERY 1981

	LAT 31 UP DATE 12/U		LONG 29 4	9.4°W	STATIO	ON NO. 103	59 M
ĭ	р	1	Р	I	Р	I	Р
963	.03	781	. O8	740	.08	587	.10
493			.10	234	.16	189	.21
164	.17	152	.21	113	.17	113	. 22
81			.23			25	.21
24			.20		.17	8	.14
ρ	.17	4	•10	4	.12		
			PARAMETE	R VALUES			
	P5 :	.27	AL PHA 1	.025	BET	rA 1 .0	005
	.25.	.28)	(.022,	.028)	(.0004, .0	006)
AMPL	E TEMPERA	TURE 18.6	С	INCUBAT	ION TEMPER	ATURE 18	.0 C
	DHYLL 1						

DNA : 3.02

PROTEIN: 23.00 SILICATE

NITRATE

: .33

.95

CARRON : 131

NITPOGEN : 42

-26-

DISCOVERY 1981

	DATE 13/05/81		LONG 31 4	2.2'W	STATION NO. NON-T DEPTH 3 M			
J	р	Ţ	Р	Ţ	Þ	Ţ	Р	
842	• • •	760	.69	583	.58	513	.56	
131	2.12	361 127	2.09	189 104	2.07	172 98	2.72	
13		32 7	1.46	21 6	1.98	20	1.44	

PARAMETER VALUES

ALPHA : .117

BETA :

.0076

(2.	.00,	3.22	3	(.	098,	.135)	(.0054,	.0098
CAMPLE TEN	IPERA	TURE	19.5 C			INCUBATION	TEMPER	ATURE	15.5 C
CHLOROPHYLL	. :	.07	RN	Δ	:	1.43	AMMONIA	1	.09
CARBON	:	210	DN	Δ	:	3.12	NITRATE	1	.05
NITBUCEN	1	23	PR	NTEI	NI	12.30	STLICAT	F t	.85

PS: 2.91

DISCOVERY 1981

DATE 13/05/81					STATION NO. NON-T DEPTH 3 M			
Ţ	Р	Ţ	Р	I	P	1	P	
286	1.69	842	2.34	842	2.06		2.03	
575		452	2.72		2.44		2.36	
	2.26		2.52	131	2.36	153	2.52	
88	2.25	80	6.47	63	2.27	61	2.17	
	1.82		2.14		1.56		1.65	
13	1.49	11		2	1.61		1.61	
			PARAMETE	R VALUES				
	DS 1	2.16	ALPHA :	.461	BE.	TA: .	0000	
(2.05,	2.27)	(.368,	.554)	(-	.0002, .	0002)	
SAMPLE	TEMPERA	TURE 19.5	С	INCUBAT	ION TEMPER	ATURE 2	3.0 C	
					AMMONIA		•09	
HLUBUD	HAFF 1	• 07	RNA :	1.43	AINOMMA		•09	

NITROCEN

: 23

PROTEIN: 12.30 SILICATE : .85

-28-

DISCOVERY 1981

Ţ	Р	1	Р	I	Р	I	p
162	2.15	801	2.11	637	2.13	567	2.55
85	2.96	361	2.86	353	2.66	275	2.23
72	2.54	123	2.32	100	2.83	92	2.80
76	2.64	74	2.73	57	2.15	52	2.28
32	2.01	26	2.12	18	1.66	17	1.71
12	1.48	7	1.25	6	1.33	4	1.23
3	.98						

PARAMETER VALUES

P5 1	2.	57	ALP	HA :	.199	BETA :		.0003
(2.4	5, 2.	58)	(.17?,	.226)	(0.000	0,	.0006)
SAMPLE TEMP	ERATUR	RF 19.5	С		INCURATION	TEMPERATUR	E	20.2 C
CHLOROPHYLL	: .0	07	RNA	1	1.43	AINCHMA	t	.09
CARRON	: 21	10	DNA	:	3.12	NITRATE	1	.05
NITROGEN	1 2	23	PROTE	TNI	12.30	SILICATE	ı	.85

DISCOVERY 1981

LAT 33 03.0 N DATE 14/05/81			L DNG 34 2	4.5 W	STATION NO. 10360 DEPTH 30 M			
I	Р	ī	Р	1	р	I	Р	
962 361	.60 .81	801 353	.69 .81	637 275	•72 •83	485 172	•86 •77	
123 74	88.	100 57	·84	92 32	.89 .53	76 26	.78	
18	.43	17	.40	14	.34	12	.34	

PAR	AMET	ER V	ALUES
-----	------	------	-------

.033

BETA :

.0003

(,	86,	• 93)	(.030,	.036)	(.0002,	.0004
CAMPLE TEN	PERA	TURF	19.5	c		INCUBATION	I TEMPER	ATURE	21.0 C
CHEUKODAAAFI	1	•10		RNA	1	1.56	AMMONIA		.13
CARRON	:	84		DNA		4.24	NITRATE	:	.11
MILBUCEN	:	19		PROT	FIN:	11.25	SILICAT	E t	.94

ALPHA :

1 20

.90

DISCOVERY 1981

LAT 33 03.01N DATE 14/05/81			LONG 34 2	4.5 W	STATION NO. 10360 DEPTH 110 M		
1	P	1	p	I	P	1	p
986	.00	830	.00	764	.06	740	.07
563	.12	402	.15	386	.09	201	.12
180	.19	135	.15	131	.19	119	.20
RR	.21	71	.21	63	.19	30	.21
27	.17	21	.18	18	.19	12	.12
12	.13	6	.09	6	.09	3	.06

				DA	RAMETE	R VALUES			
PS :		.23		AL	PHA 1	.017	BETA :		.0005
(22,	.25)	(.014,	.019)	(.000	4,	.0005)
SAMPLE TE	MPERA	TURF	18.6	С		INCUBAT	TION TEMPERATUR	F	18.3 C
CHLOBUBHAFI	:	.45		PNA	1	1.01	4 MMONI 4	t	.09
CARRIN	:	75		DNA	1	1.90	NITRATE	1	.51
NTTROCEN	t	22		PROT	EIN:	23.50	SILICATE	ı	1.15

-31-

DISCOVERY 1981

_	T 33 03.0° TE 14/05/8		L NG 34 2	4.5 W	STATI	ON NO. 103 TH 150	
Ţ	p	Ī	Р	I	P	1	p
942	.06	760	.12	583	.10	513	.07
308	.20	361	.12	189	. 46	172	.32
74	.46	32	.50	13	.27	12	.48
4	.12	4	.38				

PARAMETER VALUES

PS : .58

ALPHA : .053 BETA : .0017

(.48,	.69)	(.037,	.068)	(.00	10,	.0025
SAMPLE T	FMPERA	TUPE	18.2	С		INCURAT	ION TEMPERATU	IRE	18.0 C
CHLUKUBAA	LL 1	•11		RNA	1	.34	AMMONTA	1	.24
CARRON	:	40		DNA	:	1.36	NTTRATE	1	1.36
NILDUGEN	ŧ	17		PROT	FTN:	9.97	SILICATE	1	1.13

DISCOVERY 1981

	T 33 33.6 TE 15/05/6		LONG 33 3	2.1'W	STATI	TH ND. 103	61 M
Ţ	р	ī	р	I	p	I	р
904	.09	731	.13	534	.24	452	.19
419	.28	394	.23	185	.20	168	.19
123	.23	115	.27	90	. 25	8.8	. 27
59	.23	53	. 23	32	.31	. 30	.28
19	.24	15	.25	11	.13	11	.18
5	.11	5	.11	3	.11	3	.07

1	D	A	D	A	M	F	T	E	D	V	A	1	i	9	E	C	

b č	t	.27		AL	PHA :	.028	BETA	1	.0002
(.25,	.29	1	(.024,	.033)	(.00	01,	.0003
SAMPLE TE	MPERA	TURE	18.8	С		INCUBAT	ION TEMPERATU	RE	15.5 C
CAFUKUbHAFI	. :	.87		RNA	1	4.60	AMMINIA	1	.10
CARRON	1	140		DNA	1	4.52	NITRATE	1	1.11
NITROGEN	:	42		PROT	ETN:	35.50	SILICATE	1	1.11

DISCOVERY 1981

	TE 15/05/8		LONG 33 3	2.1'W	DEP	ON NO. 103 TH 60	
ī	р	I	Р	ı	Р	I	р
964	.12	740	.17	690	.09	518	•17
444	.15	370	.19	185	.20	123	.15
E 1	.19	36	.15	30	.17	20	.15
18	.14	14	.11	13	.08	6	.06
6	.08	3	.07				

				PAI	RAMETER	R VALUES			
05 1		• 19		AL	PHA t	.012	BETA B		.0001
(.	17,	.21)	(.010,	.014)	(0.000	00,	.0001)
SAMPLE TEM	PERA	TURE	18.8	С		INCURATI	ON TEMPERATUR	E	28.0 C
CHLOBUBHALI	ı	.87		RNA	1	4.60	AINOMMA	t	.10
CARRON	:	140		DNA	1	4.52	NITPATE	:	1.11
MITOUGEN	:	42		PROT	FIN:	35.50	SILICATE	:	1.11

DISCOVERY 1981

DATE 15/05/81			LONG 33 3	2.1'W	STATION NO. 10361 DEPTH 60 M		
1	Р	1	Р	1	р	1	Р
945	.10	945	.10	801	.12	748	•16
616	.24	485 .	.23	476	.19	411	.14
341	.12	164	.18	131	.20	100	.23
95	.23	71	.22	69	.16	5 5	.23
51	.25	36	.23	27	.27	17	.16
16	.21	13	.13	11	.13	6	.06
45	.06	3	.05	3	.05		

67.1		. 64		AL	РНД 1	.01H	BETA	1	.0002
	22,	. 25)	(.015,	.021)	(.00	01,	.0002)
SAMPLE TEM	PERA	TURE	18.8	C		INCURA	TION TEMPERATU	RE	24.0 C
CHLOROPHYLL	:	. 97		RNA	3	4.60	AMMONTA	ŧ	.10
CARRON	1	140		DNA		4.52	NITRATE	1	1.11
NTTRUCEN	:	42		PROT	ETN:	35.50	SILICATE	:	1.11

DISCOVERY 1981

p	I					
		p	T	P	1	P
.02	896	.03	670	.01	583	.09
.18	444	.13	316	.13	193	.36
.28	131	.34	108	.29	94	•36
	69	.29	40	. 22	33	.26
	20	.26	16	.14	B	. 07
-	5	. 04	5	.05		
	.33 .12 .10	.12 20	.12 20 .26	.12 20 .26 16	.12 20 .26 16 .14	.12 20 .26 16 .14 8

DAD	AMET	CD	MAI	HES
אמש	A m - 1	F K	VAL	1111 3

P5 1		.53		AL	PHA I	.010	BETA :		.0017	
(.4	4,	.62)	(.009,	.012)	(.001	1,	.0023)	
SAMPLE TEMP	PERA	TURE	18.8	С		INCUBAT	ION TEMPERATUR	E	19.6 C	
CHLUBUBHALL	1	.87		RNA	:	4.60	AMMONIA	:	.10	
CARRON	ı	140		DNA	1	4.52	NITRATE	:	1.11	
NITROGEN	1	42		PROT	EINI	35.50	SILICATE	1	1.11	

	T 33 34.8 TF 15/05/8		L UNG 33 3	2.1'W	STATI	ON NO. 103 TH 56	
Ī	p	I	Р	I	Р	1	Р
740	.03	452	.08	168	.25	123	•32
88	.34	53	.32	32	. 26	19	.18
11	.15	5	.10	3	.05	2	.02

ps	:	.53		AL	PHA :	.014	BETA	1	.0022
(.49,	•58)	(.013,	.015)	(.00	18,	.0027
SAMPLE T	EMPER	ATURE	18.0	С		INCUBA	TION TEMPERATU	RE	15.5 C
CHEOROPHY	LL :	1.30		RNA	1	4.03	AMMONTA	1	. 44
CARBON	:	128		DNA	:	7.72	NTTRATE	:	.61
NITROGEN	:	41		PROT	FINE	24.15	SILICATE	3	1.13

DISCOVERY 1981

	AT 33 34.8 M ATE 15/05/81		L TNG 33 3	2.1 W	STATI	DN NO. 103 TH 56	
1	p	Ī	p	I	р	Ť	Р
344	.00	740	.01	370	.07	156	.09
123	.13	98	.13	51	.16	30	.09
18	.13	13	.07	6	.04	3	.04
2	.02	1	.01				

PS	:	.18		AL	PHA :	.009	BETA :		.0006
(.16,	.21	1	(.007,	.010)	(.000	4,	.0008)
SAMPLE TE	MPERA	TURE	10.0	С		INCUBATIO	N TEMPFRATUR	E	27.5 C
CHLOROPHYL	:	1.30		RNA		4.03	AMMONIA	:	. 44
CARRON	2	129		DNA	1	7.72	NITPATE	:	•61
NITROGEN	1	41		PROT	EINI	24.15	STLICATE	1	1.13

DISCOVERY 1981

LAT 33 34.8 N DATE 15/05/81			L NNG 33 3	2.1'W	STATION NO. 10362 DEPTH 56 M		
Ţ	р	I	Р	1	Р	ī	р
945	.03	616	.08	411	.21	164	.32
100	.35	71	.34	55	. 25	30	.24
17	.16	13	.10	6	.04	3	.04

Þ	, 1		• 26		ΔL	PHA I	.010	HETA	ı	.0016
(•	48.	•53)	(.009,	.011)	(.00	11,	.0020
SAMPLE	TEM	PFR.	ATURE	18.0	С		INCURAT	ION TEMPERATUR	₹E	23.0 C
СНГ ЦБ ПЬН	IYLL	t	1.30		RNA	1	4.03	AMMONTA		.44
CARRIN		:	128		DNA	t	7.72	NITRATE	:	.61
NITONGEN	ì	:	41		PROT	EINE	24.15	SILICATE	2	1.13

-39-

DISCOVERY 1981

	T 33 34.8		LONG 33 3	2.1°W	STATI	NN ND. 103 TH 56	62 M	
Ţ	р	1	р	1	Р	I	р	
958 86	.05	583	•16 •35	316	.21	108	•38 •18	
16	.11	7	.06	5	.04	3	.00	

PARAMETER VALUES

ALPHA: .011 BETA: .0017

(.50,	.74)	(.009,	.012)	(.00	10,	.0025
SAMPLE TE	MPER	ATURE	18.0	С		INCURAT	ION TEMPERATU	RF	20.5 C
CHLOROPHYL	.1 :	1.30		RNA	:	4.03	AMMINIA	:	. 44
CARBON	:	128		DNA	:	7.72	NITRATE	:	.61
NITROGEN	:	41		PROT	EINE	24.15	STLICATE	t	1.13

PS : .63

	AT 33 34.8 ATE 15/05/8		L DNG 33 3	2.1°W	STATI	ON NO. 103 TH 56		
ı	Р	ī	P	I	P	I	p	
731 90 11	.10 .49 .21	419 59 5	•23 •55 •12	185 30 3	. 45 . 49 . 07	115 15 1	•59 •34 •04	

				PA	RAMETER	R VALUES			
05 :		.74		AL	PHA :	.028	BETA 1		.0020
	50,	.79)	(.025,	.030)	(.001	6,	.0025)
SAMPLE TEM	PERI	TIIRF	18.0	c		INCUBATION	N TEMPERATUR	E	15.5 C
CHLOROPHYLL	:	.42		RNA	t	1.43	AMMONIA	1	. 44
CARRON	t	104		DNA	t	2.34	NITRATE	1	.61
NITROGEN	1	36		PROT	ETN:	-	SILICATE	:	1.13

	T 33 34.8' TF 15/05/8		LONG 33 3	2.1°W	STATI	ON NO. 103 TH 56	62 M	
I	Р	J	Р	1	Р	I	Р	
966	.07	519	•13	185	. 28	127	.37	
14	.31 .15 .03	54	. 35	36 3	• 26 • 05	20	.18	

				PAI	RAMETE	R VALUES				
p S 1		.47		AL	рна в	.013	BETA	ŧ	.0011	
(.	43,	•51)	(.012,	.014)	(.00	,800	.0013)	
SAMPLE TEM	PERA	TUPE	18.0	С		INCURATION	TEMPERATI	IRE	27.5 C	
CHFUBUBHAFF	ŧ	. 4?		RNA	ŧ	1.43	AMMONIA	1	. 44	
CARBON	:	104		DNA	:	2.34	NITRATE	1	.51	
NTTROGEN	:	35		PROT	EINI	-	SILICATE	1	1.13	

DISCOVERY 1981

	T 33 34.81		L TNG 33 3		DEP	DN NO. 103	
Ī	p	I	Р	I	р	ı	Р
801	.09	476	.25	341	.41	131	.56
95	.51	51	.54	27	. 35	16	. 25
11	.13	5	.12	3	.07	2	.03

P	. 80) Al	PHA:	.018	BETA 1	.0018
. 1 .	72, . 6	7)	.016,	.020	(.0014,	.0023)
SAMPLE TEM	PERATURE	18.0 C		INCURATION	TEMPERATURE	23.0 C
CHLOROPHYLI	: .42	RNA	:	1.43	AMMONTA :	.44
CARRIN	: 104	DNA	1	2.34	NITRATE :	.61
NTTRUCEN	1 36	PRN	TETN:	-	SILICATE #	1.13

DISCOVERY 1981

LAT 33 34.8*N DATE 15/05/81			LONG 33 32.1°W STATION NO. 10				0362 66 M	
ı	Р	I	Р	1	Р	I	р	
670	•17	444	•37	193	• 69	131	. 68	
94	.66	40	. 44	22	.31	16	.25	
8	.13	F	.14	3	.06	2	.05	

P5 1		1.21		AL	рна :	.017	SETA	t	.0033
(1.	10,	1.31	1	(.016,	.018)	(.00	27,	.0039)
SAMPLE TEM	PERA	TURE	18.0	С		INCUBAT	TION TEMPERATU	RE	20.5 C
CHLUSUSHYLL	1	.42		RNA	3	1.43	AINUMMA	ŧ	. 44
CARRON	1	104		DNA	1	2.34	NITRATE	1	.61
NITROGEN	:	36		PROT	FIN:	-	SILICATE	:	1.13

DISCOVERY 1981

LAT 34 00.1°N DATE 14/05/81						STATION NO. 10364 DEPTH 60 M				
Ţ	р		T	p		I	Р	I	P	
970	.00		945	•00)	723	.00	699	.04	
645	.08		592			501	.02	411		
374	.02		189		3	164	.21	121	.29	
115	.27		8.8			82	. 34	58		
57	.37		32	. 30	9	28	.31	19	.32	
			11	. 26	5	11	.24	5	.17	
4	.17		3	.12	2	3	.12			
				PAR	METE	R VALUES				
D	: ?	.47		ALPH	-IA :	.037	9 E	TA: .	0022	
(. 44,	.49)	(,	034,	.040)	(.0019, .	0026)	
CYMPLE	TEMPER	TURE	18.0	٢		TNCUBAT	ION TEMPER	ATURE 1	5.0 C	
CHFUBUPH	YLL:	.6?		RNA	2	3.36	AINONNA	1	.21	
CARBUN	2	105		DNA	8	4.76	NITRATE	:	•59	
NTTROGEN	1	36		PROTE	IN:	24.80	SILICAT	E 8	1.15	

DISCOVERY 1981

	LAT 34 00.100		LDNG 32 4	9.9*W	STATE	DN ND. 103 TH 60	
T	p	1	p	I	Р	1	p
	6 .06	871 522 164 24	.03 .08 .11 .17	814 493 131 18	.05 .07 .12 .18	690 386 123 14	.04 .08 .20 .09

				PAR	AMETER	VALUES			
DS 8		. 18		ALF	PHA 1	.015	BETA 1		.0003
t .:	16,	.20)	1	.012,	.018)	(,)00	2,	.0004 1
SAMPLE TEM	PER	ATUPE	18.0	С		INCURATION	TEMPERATU	RE.	28.0 C
CHEUBUBAART	t	.62		PNA	1	3.36	AMMONTA	1	.21
CARANN	:	105		DNA	2	4.76	NITRATE	2	.59
FTERREN	:	36		PROT	EIN:	24.80	SILICATE	1	1.15

DISCOVERY 1981

_	LAT 34 00.1 N DATE 16/05/81			9.9"W	STATION NO. 10364 DEPTH 60 M			
1	p	Ţ	p	I	p	I	p	
806	.06	826	.07	711	.07	666	.09	
546	.10	452	.07	431	.11	242	.18	
205	.14	174	.18	148	. 20	115	.22	
111	. 22	80	.23	45	.20	43	.22	
30	.??	19	.19	18	.19	11	.17	
10	.14	6	.12	6	.11			

P 5 :	. 24	Al	PHA :	.023	BETA :	.0004
1 . 2	23, .25	5)	.021,	.026)	. (.0004	.0005)
SAMPLE TEME	PEDATURE	18.0 C		INCURATION	TEMPERATURE	22.5 C
CHLOROPHYLL	: .62	RNA	:	3.36	AINUMMA	ı .21
CARRON	1 106	DNA	t	4.76	NITRATE	.59
NITOUCEN	: 36	PROT	TETN:	24.80	SILICATE	1.15

DISCOVERY 1981

	T 34 00.1" TF 16/05/8		LONG 32 4	9.9*W	STATI	ON NO. 103 TH 60	
7	p	1	P	I	Р	I	p
926	.02	731	.05	657	.06	616	.14
5 5 5	.10	411	.20	259	.19	217	.30
180	.24	148	.27	118	.33	113	.29
63	.37	49	.39	46	.34	36	. 40
34	. 41	24	.39	23	.33	13	.22
12	.2?	8	.18	7	.17		

				PAI	RAMETER	R VALUES			
05 1		. 45		AL	PHA :	.030	96	TA:	.0012
(.	42,	. 47)	(.026,	.033 1	(.0010,	.0014)
SAMPLE TEM	PFRA	TURE	18.0	C		INCUPATION	TEMPER	ATURE	20.0 C
CHLOROPHYLL	:	.62		RNA	2	3.36	AMMONIA	:	.21
CAPAUN	:	106		DNA	:	4.76	NITRATE	t	• 5 9
NITROGEN	1	36		PRINT	ETNI	24.80	SILICAT	E 1	1.15

DISCOVERY 1981

		T 33 31.911 TE 16/05/8		LUNG 33	32.3°W	STATIO	NO. 103		
-	Ţ	Р	I	р	Ī	P	I	p	
	719	.09 .31	472 63	.09 .24	180 30	•18 •24 •07	135 13	.21 .18	

PARAME	TER V	ALU	IES
--------	-------	-----	-----

P5 3		.30		ALF	HA :	.023	BETA	:	.0006
	27,	• 32)	(.019,	.027)	(.0	004,	.0008
SAMPLE TEM	PFRA	TURE	18.8	C		INCUBATTO	TEMPERAT	URE	15.0 C
CHFOROSHAFF	:	. 11		RNA	:	3.98	AMMONIA	1	.25
CARRON	1	121		DNA	1	5.74	NITRATE	1	1.35
NITPOGEN	:	32		PROT	ETN:	33.30	SILICATE	:	1.37

DISCOVERY 1981

	T 33 31.91 TE 16/05/8		L NNG 33 3	2.3.M	DEP	ON NO. 103 TH 43	M
Ī	p	I	p	1	Р	I	р
752	.11	361	.23	172	. 25	117	.28
75	.27	55	.32	29	. 29	19	.24
12	.17	4	.14	2	.11	1	.09
1	-08						

				PAR	AMETER	VALUES			
05	t	• 31		ALP	на в	.030	BETA	t	.0004
(.29,	.34)	(.025,	.035)	(.000	03,	.0005)
SAMPLE TE	MPERA	TURE	18.8	С		INCURAT	ION TEMPERATU	5 É	18.0 C
CHI UB DOHAI	l I	.91		RNA	1	3.98	AMMONIA	1	.25
CARBUN	:	121		DNA	:	5.74	NITRATE	1	1.35
HITPOGEN	1	32		PRITE	IN:	33.30	SILICATE	1	1.37

DISCOVERY 1981

	T 33 31.9' TE 16/05/8		LONG 33 3	2.3'W	STATI	ON NO. 103 TH 43		
I	р	Ţ	Р	I	P	I	p	
707	.15	452	.17	176	.19	127	.27	
82 16	.30	66 8	.18	34	.25	21	.25	
?	.12	.,	• • •		• • •		• • •	

P	A	B	4	M	E	T	E	R	V	Δ	l	U	E	S

05 :		.28		ALF	H4 :	.038	BETA	t	.0003
(.	26,	. 29)	(.032,	.044)	(.000	02,	.0004)
CAMPLE TEM	PERA	TURF	18.8	C		INCUBAT	TION TEMPERATU	RE	25.ª C
CHLOROPHAFF	:	· 81		RNA	;	3.98	AMMONTA	2	.25
CARRON	:	121		DNA	1	5.74	NITRATE	1	1.35
NITROGEN	1	32		PROTE	INE	33.30	SILICATE	3	1.37

DISCOVERY 1981

	T 33 31.91 TE 16/05/8		LONG 33 3	2.3'W	STATI	ON NO. 103 TH 43	
I	p	Ţ	Р	1	p	I	P
723	.15	444	.20	180	.21	127	.29
99	.32	69	.31	28	. 26	20	.25
11	.18	6	.12	5	.07	4	.09

ALPHA : .021

SETA :

.0004

(. 3	1.	• 35)	(.019,	.024)	(.0003,	.0005
SAMPLE T	EMP	FRA	TURE	18.8	С		INCUBATIO	IN TEMPER	ATURE	22.0 C
CHLOPOPHY	'LL	1	.81		PNA		3.98	AMMENIA	•	.25
CARRON		1	121		DNA	1	5.74	NITRATE	1	1.35
NTTROGEN		:	32		PROT	FTN:	33.30	STLTCAT	F :	1.37

PS :

.33

DISCOVERY 1981

	T 33 31.9' TE 16/05/8		L ING 33 3	2.3'V	STATI	TH 43	
1	P	Ţ	Р	Ţ	Р	I	P
904	.03	476	.67	361	•11	154	•18
110	.20	86	.22	65	.18	31	.17
1 .	.14	11	.10	4	.06	3	.04
2	.05	1	.03				

ALPHA : .012

BETA :

.0006

SAMPLE TEMPERATURE 18.8 C INCUBATION TEMPERATURE 1	15 0 0
SAMPLE TEMPERATURE 18.8 C INCUBATION TEMPERATURE 1	17.0 (
CHEOROPHYEL 1 .55 RNA 1 1.07 AMMONIA 1	.25
CARRON : 88 DNA : 1.59 NITRATE :	1.35
NITROGEN : 33 PROTFIN: - SILICATE :	1.37

PS 1

. 25

	T 33 31.91 TE 16/05/8		LUNG 33 3	2.3'W	STATI	กพ พก. 103 TH 43		
I	p	Ţ	Р	ī	Р	ī	р	
884	.10	472	.31	164	.25	119	.29	
97 7	.30	34	•31 •07	20 2	.18	13	.14	

PARAMETER VALUES

PS: .33 ALPHA: .016 BFTA: .0003

(.30, .37) (.013, .020) (.0002, .0004)

SAMPLE TEMPERATURE 18.8 C INCURATION TEMPERATURE 18.0 C

CHLOROPHYLL: .55 RNA: 1.07 AMMONIA: .25

CARRON: 88 DNA: 1.59 NITRATE: 1.35

NITROGEN: 33 PROTEIN: - SILICATE: 1.37

LAT 33 31.9°N DATE 16/05/81			LUNG 33 3	2.3'W	STATION NO. 10365 DEPTH 43 M			
Ţ	p	I	p	I	Р	I	p	
575	.14	296	.17	164	.19	85	•20	
60	.22	23	.13	14	.12	8	.09	

P5 1		.21		AL	PHA :	.016	BETA	1	.0001
	18,	• 23	•	(.013,	.020)	(0.00	00,	.0002
SAMPLE TEM	PFRA	TURE	18.8	c		INCUBATT	ON TEMPERATU	RE	25.0 C
CHLOROPHYLL	:	.55		RNA		1.07	AMMONIA	t	.25
CARRON		89		DNA	1	1.59	NITRATE	1	1.35
NITOREN		33		PROT	ETN:	-	SILICATE	:	1.37

LAT 33 31.9 N DATE 16/05/81		LONG 33 3	2.3'W	STATION NO. 10365 DEPTH 43 M			
ī	P	Ī	Р	1	Р	1	Р
760	.12	483	.16	209	.27	105	.29
74	.33	45	.26	26	.20	2.2	.18
10	.13	7	.15	5	.11	4	.08

(.31, .38) (.013, .018) (.0003, .0006) SAMPLE TEMPERATURE 18.8 C INCUBATION TEMPERATURE 22.0 C CHLOROPHYLL 1 .55 RNA 1 1.07 AMMONIA 1 .25 CARRON : 88 DNA : 1.59 NITRATE : 1.35 NITROGEN : 33 PROTEIN: - SILICATE 1 1.37	PS	:	. 34		AL	PHA I	.016	BETA		.0005
CHLOROPHYLL : .55 RNA : 1.07 AMMONIA : .25 CARRON : 88 DNA : 1.59 NITRATE : 1.35	(.31,	.38	1	(.013,	.018)	(.00	03.	.0006
CARRON : 88 DNA : 1.59 NITRATE : 1.35	SAMPLE TE	MPFR	RATURE	16.8	c		INCUBAT	ION TEMPERATU	RE	22.0 C
	CHF UB UBHAF	LI	• 55		RNA	1	1.07	AMMUNIA	1	.25
NITPOGEN : 33 PROTEIN: - SILICATE : 1.37	CARRON	:	88		DNA	:	1.59	NITRATE	:	1.35
	NITPOGEN	:	37		PRIT	FINI	-	SILICATE	1	1.37

DISCOVERY 1981

LAT 32 07.21N Date 20/05/81			LONG 27 57	7.8°W	STATION NO. 10369 DEPTH 110 M		
Ţ	p	Ī	Р	ī	P	I	Р
845	.24	526	.55	79	.54	63	.40
34	.48	17	.31	5	. 29	3	.23

	P 5 1		.46		AL	PHA :	.096	BETA	:	.0001
(• '	40,	.52	,	(.062,	.131)	(0.00	00,	.0003
SAMPLE	TFM	PERI	ATURE	18.0	С		INCURA	TION TEMPERATU	RE	15.5 C
CHLOROP	HYLL	:	.22		RNA	1	1.14	AMMONIA	:	.12
CARRON		1	71		DNA	:	2.16	NITRATE	1	.19
NTTPOGE	N	:	-		PRUT	ETNI	32.10	SILICATE	1	.89

_	DATE 20/05/81		LONG 27 5	/•0 · W	DED.	ON NO. 103 TH 110	110 M	
T	Р	Ţ	Р	I	P	Ī	p	
921	. 5.4	458	• 40	179	.59	83	.40	
65	.47	31	.38	19	. 43	6	.22	
3	.20	?	.14	2	.13			

	5	:	.47		AL	PHA :	.052	9ETA :		.0000
•		.43,	• 51)	(.039,	.066)	(000	1,	.0001)
SAMPLE	TE	MPER	ATURE	18.0	c ·		INCURA	TION TEMPERATUR	E	18.2 C
CHFOsubr	141	Lŧ	.27		PNA	1	1.14	AMMONIA	:	•12
CARPUN		t	71		DNA	t	2.16	NITRATE	1	.19
NTTPHEE	N	:	-		PROT	ETN:	32.10	STLICATE	:	.89

-58-

DISCOVERY 1981

LAT 32 07.2 N DATE 20/05/81		LONG 27 5	7.8'W	STATION NO. 10368 DEPTH 110 M			
Ţ	p	1	р	I	Р	I	Р
709	•23	494	.21	247	.33	171	.32
131	.35	109	.39	26	.38	10	.27

D 5 1		.39		AL	PHA 1	• 065	BETA		.0014
(.	37,	.42)	(.057,	.073)	(.000)3,	.0005 1
SAMPLE TEM	PER	TURE	18.0	С		INCUBAT	ION TEMPERATUR	RE	24.0 C
ראן הפהפאצון	. 1	. 22		RNA	1	1.14	AMMONIA	1	.12
CARRON	:	71		DNA	:	2.16	NITRATE	:	.19
NTTROGEN	1	-		PRIT	FIN:	32.10	SILICATE	1	.89

DISCOVERY 1981

LAT 32 07.2'N DATE 20/05/81			LONG 27 5	7.8'W	STATION NO. 10369 DEPTH 110 M				
ī	D	1	р	I	Р	Ţ	Р		
677	.07	466	.74	243	.32	207	•35		
147	.34	27	.36	10	.31	5	.21		

ALPHA : .044

PS : .45

8C00. : ATSR

(.	40,	.50)	(.036.	.053)	(.00	05,	.0011
SAMPLE TEN	1PERA	TURE	14.0	С		INCURAT	TION TEMPERATU	RE	20.5 C
CHLOROPHYLL		• 23		RNA	:	1.14	AMMUNIA	:	.12
CARRON	:	71		DNA	:	2.16	NITRATE	:	-19
NITROGEN	1	-		PPNT	ETNI	32.10	SILICATE	1	.89

DISCOVERY 1981

	LAT 32 07.2 N DATE 20/05/81		LONG 27	57.8'W	STATI	ΠΝ ΝΠ. 103 TH 110		
1	Р	Ţ	P	I	Р	I	P	
99 <i>6</i> 19 ⁵	. 45	665 60 7	.04 .37 .21	538 32 5	•15 •43 •09	275 23 4	• 25 • 26 • 07	

P5 1		.61		AL	PHA :	.021	BETA	ı	.0017
	48,	.74)	(.017,	.025)	(.00	99,	.0025)
SAMPLE TEM	PFKA	TURE	18.0	С		INCUBATI	ON TEMPERATU	RE	15.5 C
CHLOROPHYLL	:	.12		RNA	t	.71	AMMONIA	:	.12
CAPRIN	:	40		DNA	1	1.23	NTTRATE		.19
NITPHEFN	:	-		PROT	FIN:	8.35	SILICATE	:	.89

DISCOVERY 1981

	AT 32 07.2' TE 20/05/8		LONG 27 5	7.8'W	STATI	ON NO. 103 TH 110		
T	Р	I	Р	I	Р	ī	Р	
964	.07	717	.07	470	.18	207	.25	
135	. 28	75	.30	67	• 32	33	. 32	
17	.23	11	.22	4	.13	2	.12	

P5 1		. 34		ALP	HA S	.034	BETA	1	.0006
(.:	33,	•36)	(.030,	.036)	(.00)5,	.0007)
SAMPLE TEM	PERA	TURE	18.0	c		INCURAT	ION TEMPERATU	E	18.2 C
CHLOROPHYLL	ı	•12		RNA		.71	AMMONIA		.12
CARRON	:	40		DNA	:	1.23	NITRATE	:	.19
NITPOGEN	:	-		PROTE	TNI	8.35	SILICATE	:	.89

DISCOVERY 1981

	T 32 07.2'N TE 20/05/81		LONG 27	57.8°W	STATION OFPTH	Nn. 10	368 0 M
Ţ	Р	Ţ	Р	ī	Р	ī	Р
897	•09	558	.18	179	.27	139	•25
67	.22	32	.16	19	.15	13	.15
6	.10	3	.12	2	.08		

PARAME	TER	VALUES
AI PHA	:	.016

29	:	• 26		٨L	PHA :	.016	BETA	1	.0002
(.23.	. 30)	(.011,	.020)	(.00	,100	.0004
SAMPLE TE	MPERA	TUPÉ	18.0	c		INCUBATIO	N TEMPERATU	IRE	24.0 C
CHLOROPHYL	L:	.1?		RNA	:	•71	4 MMONT 4	:	.12
CARRON	:	40		DNA	ı	1.23	NITRATE	1	.19
NITROCEN		-		PROT	EINE	8 • 35	SILICATE	1	.89

	OVERY	1981	
--	-------	------	--

	AT 32 07.2"		LONG 27 5	7.8'W	STATIO	N NO. 103	
1	Р	1	Р	1	P	I	Р
988	.12	645	•12	438	.20	231	.27
105	.27	24	.27	16	.23	В	.21
F	•1 F	3	.18	3	.16		

20	:	• 58		AL	PHA :	.051	PETA	1	.0003
(.26,	•30)	(.042,	.060)	(.00	02,	.0003
SAMPLE TI	EMPERA	TUPE	18.0	c		INCURAT	ION TEMPERATU	RE	20.5 C
CHLOROPHY	LL :	.12		RNA		.71	AMMONTA	t	.12
CARRON	ı	40		DNA		1.23	NITRATE	1	.19
NITRUCEN	:	-		PROT	ETN:	8.35	STLICATE	t	.89

	T 32 23.1" TE 22/05/8		L DNG 33 3	1.2'W	STATIO	N NO. 103 H 79	71 M
Ţ	D	Ī	р	t	Р	I	Р
845	.08	526	.12	79	.24	63	.25
34	.24	17	.20	12	.13	5	.09
3	.08	2	.06	1	.05		

D \			• < 1		AL	PHA I	• 020	DETA	•	.0004
(. ?	5,	.29)	(.017,	.022)	.00	03,	.0005
SAMPLE T	EMP	FR	TUPE	18.5	С		INCURA	TION TEMPERATU	RE	15.5 C
CHEUBUDHA	'nι	1	.79		RNA	1	3.96	AMMONTA	1	.11
CARBON		:	198		DNA	:	5.50	NITRATE	:	.42
NTTRAGEN		:	19		PROT	FTN:	32.50	SILICATE	1	1.10

DISCOVERY 1981

LAT 32 23.11N DATE 22/05/81			LONG 33 31.2'W		STATION NO. 10371 DEPTH 79 M		
Ţ	P	ī	Р	ı	p	ī	Р
921	.12	458	.10	135	•20	82	.22
65	.23	31	.23	19	. 21	12	.17
6	•12	3	.10	2	.09	2	. 05

	DS :		.24		AL	PHA :	.028	BETA	:	.0003
	(.	22,	. 25)	(.024,	.032)	(.00	02,	.0004)
SAMPI	E TEM	PERA	TURE	18.5	٢		INCUBA	TION TEMPERATU	RE	18.9 C
CHLORI	јону г Г	:	.79		RNA	t	3.96	AMMONIA	:	.11
CARBO	J.	t	198		DNA	:	5.50	NITRATE	1	.42
NITRO	EN	1	19		PRIT	FTNI	32.50	SILICATE	1	1.10

-66-

DISCOVERY 1981

	T 32 23.11N TE 22/05/F1		LONG 33 3	1.2'W	STATI	ON NO. 103 TH 79	71 M
Ī	p	Ţ	Р	1	P	I	p
709	•06	494	•09	247	.17	171	•21
109	.19	17	.28	6	. 22	3	.14

PARAMETER VALUES

.061

BETA :

.0007

ALPHA :

PS 1 .29

	27,	•31)	(.05	2, .071)	.00	05,	.0008
SAMPLE TEM	PERA	TURE	18.5 C		TNCURAT	TION TEMPERATU	PE	25.5 C
CHLOROPHYLI	1	.79	PN	Δ :	3.96	AMMONIA	1	.11
CARRON	1	198	DN	A 8	5.50	NTTRATE		.42
NITPOGEN	:	18	PR	OTETN:	32.50	SILICATE	1	1.10

-67-

DISCOVERY 1981

		2 23.11		LONG 33 3	31.2'W	STATI	ON NO. 103 TH 79		
	T	Р	ī	p	ī	Р	I	р	
40	56	.09	207	.22	147	.22	99	.26	
•	7	.2P	27	.30	21	.07	10	.21	

PARAMETER VALUES

ALPHA : .024

BETA :

.0008

(• :	31,	.36)	(.022,	.027)	(.0006,	.0011
SAMPLE	TEM	PER	TURE	18.5	С		INCUBATION	TEMPER	ATURE	22.0 C
CHLOROPH	YLL	1	. 79		RNA	1	3.90	AMMONIA		•11
CAPPON		:	198		DNA	:	5.50	NTTRATE		.42
NTTROGEN		:	18		PROT	FINE	32.50	SILICAT	TE 1	1.10

PS :

.33

68-

BETA : .0010

DISCOVERY 1981

	T 32 23.1" TE 22/05/8		LUNG 33 3	1.2'W	STATI DEP	ON NO. 103 TH 79	71 M
1	Р	Ī	Р	I	Р	1	Р
964	.03	717	.04	470	.05	207	.21
135	.24	67	.21	33	. 22	17	.14
11	.12	4	.06	2	.04	2	.04

PARAMETER VALUES

ALPHA : .012

(•	30,	. 38	,	(.011,	.013)	(.00	07,	.0013
SAMPLE	TEM	PF P L	TURE	10.5	c		INCURA	TION TEMPERATU	RE	15.5 C
CHLOROPH	YLL	:	.40		RNA	:	1.14	AINOMMA		•11
CARRON		:	-		DNA	1	2.09	NITPATE	1	.42
NITROGEN	1	1	-		PRIT	ETNI	-	SILICATE	1	1.10

PC : .34

DISCOVERY 1981

	AT 32 23.1 ATE 22/05/8		L NNG 33 3	1.2'W	STATI	DN NO. 103 TH 79	
ī	Р	ī	Р	ī	Р	1	р
897	.04	558	.08	179	.16	139	.20
A ?	. 25	67	.25	32	. 24	19	.18
13	.17	5	•10	3	.05	3	.05

D	5 1		.29		AL	PHA :	.018	BETA	1	.0008
(• 8	я,	.31)	(.017,	.020)	(.00	07,	.0009)
SAMPLE	TEME	PERA	TURE	18.5	С		INCUBA	TION TEMPERATU	IRE	18.8 C
CHLOROPH	YLL	1	.40		RNA	1	1.14	AMMONIA	1	•11
CARRON		:	-		DNA	:	2.09	NITRATE	:	.42
NITROGEN	1	:	-		PROT	EINE	-	SILICATE	:	1.10

-70-

DISCOVERY 1981

_	T 32 23.1'N TE 22/05/81		LONG 33 3	1.2°W	STATI	ON NO. 103 TH 79	71 M
ĭ	p	1	Р	I	Р	1	р
645	.08	438	.15	231	.14	167	.22
131	.27	105	.37	8	. 32	5	.29
3	.20	3	. 20 .				

PARAMETER VALUES

ALPH4 : .076

BETA : .0015

(•	36,	. 50)	(.063,	.090)	(.	.0003,	.0021
SAMPLE	TEM	PERA	TURE	18.5	С		INCURATI	ON TEMPERA	TURF	25.5 C
CHF OB Obh	YLI	:	.40		RNA		1.14	AMMONTA	1	•11
CARRON		:	-		DNA	1	2.09	NITRATE	1	.42
NITROGEN		1	-		PRIT	EIN:	-	SILTCATE	1	1.10

05: .43

DISCOVERY 1981

	T 32 23.1' TE 22/05/8		L NNG 33 3	1.2'W	STATI	ON NO. 103 TH 79	71 M
ī	р	Ī	Р	I	Р	1	Р
996	.27	665	.19	538	.18	195	.30
143	.17	. 117	.27	60	. 29	23	. 26
11	.15	7	.10	5	.08	4	.07

		PAR	AMETE	VALUES			
PS 1	.27	ALF	HA I	.020	SETA 1		.0001
1 .24	.30)	(.015,	.025)	(0.0000	,	.0002 1
SAMPLE TEMPE	RATURE 18.5	c		INCUBATIO	ON TEMPERATURE		22.0 C
CHLOROPHYLL :	.40	RNA	1	1.14	AMMONIA	1	.11
CARPON :	-	DNA	:	2.09	NITRATE	1	.4?

PROTEIN:

NITROGEN

SILICATE : 1.10

DISCOVERY 1981

·	Р	Ţ	р	I	Р	I	P
96	.00	924	.00	789	.10	697	•13
537	.18	5 78	.06	486	.13	454	.11
47	. 30	203	.43	155	. 44	131	.34
F7	. 45	R 3	.36	67	. 44	62	.40
36	. 4 F	30	. 40	19	. 34	17	.36
12	. 25	6	.19	6	. 19	4	.17
4	.14						

ρç	:	.52		ALI	PHA :	.035	BETA		.0013
(.49.	• 56	,	(.030,	.039)	(.001	0,	.0015)
SAMPLE T	EMPER	ATURE	18.5	c		INCURATION	TEMPERATUR	R E	19.0 C
CHLOROPHY	LI :	•68		RNA	:	1.36	AMMONIA	:	.15
CARRON	:	73		DNA	:	3.54	NITRATE	1	1.25

SILICATE : 1.17

NITROGEN : 16 PROTEIN: 9.88

3ETA . .0000

DISCOVERY 1981

	T 34 05.7° TF 23/05/8		L DNG 34 3	7.62.4	DEPTH 67 M		
	Р	Ţ	Р	I	P	ī	Р
994	•27	924	.27	789	. 24	697	•30
637	.21	578	.28	486	. 26	454	.23
155	.24	131	.19	87	.21	83	.20
67	.22	62	.20	36	.15	30	.15
17	.13	1?	.14	12	.10	6	.11
6	.11	4	.11				

PARAMETER VALUES

ALPHA : .012

.24

PS :

(. 2	?,	.26)	(.009,	.014)	(0.0	0000,	0.0000)
SAMPLE	TEMP	ERA	TURF	18.5	С		INC	UBATION	TEMPERA	TURE	19.0 C	
CHLOROPH	YLL	:	.68		RNA		1.36		4 MMUNI 4		•15	
CARRON		:	73		DNA	:	3.54		NITRATE	:	1.25	
NITRUGEN		:	15		PROT	ETN:	9.88		SILICATE	:	1.17	

DISCOVERY 1981

	AT 34 05.70 ATE 23/05/8		LONG 34 3	7.2'W	DEP	TH 67	72 M
Ţ	P	Ī	p	Ī	Р	1	Р
924	1.07	789	1.09	697	1.00	637	•92
578	1.10	486	.97	454	. 94	247	.89
203	.85	155	.77	131	.73	87	.86
ь3	.80	67	.76	62	.83	36	.83
19	.74	17	.75	12	.60	6	.48
6	. 55						

Pς	:	.90	AL	PHA :	.098	BETA	ŧ	.0000
(.85,	.94	• (.079,	.116)	(00	01,	.0001)
SAMPLE TE	MPERA	TUPE	18.5 C		INCURATIO	N TEMPERATU	RE	19.0 (
CHLOROPHYL	l. t	. 43	RNA	1	1.36	AMMONTA	t	.15
CAPRON	1	73	DNA	1	3.54	NTTRATE	1	1.25
NITPHGFN	:	16	PROT	ETN:	9.88	SILICATE	:	1.17

DISCUNERY 1981

	T 34 05.71 TE 23/05/8		LONG 34 3	7.2'W	STATION NO. 10372 DEPTH 67 M			
Ţ	р	1	p	1	Р	I	Р	
976	.16	777	.20	745	.15	637	.28	
486	. 22	243	.42	143	.40	143	. 44	
99	. 44	98	.48	72	.50	65	.50	
38	.49	21	.51	21	. 56	12	. 47	
12	.49	7	.36	7	. 26	4	.26	
4	.21							

94	:	• > >		ALI	PH4 :	.072	BETA		.0008
(.53,	. 57	1	(.065,	.079)	(.00)7,	.0009)
CAMPLE TE	MPERA	TURE	18.5	С		INCUBAT	ION TEMPERATU	₹E	19.0 C
CHLOROPHYL		•68		KNA	:	1.36	4 MMONI 4	:	.15
CARRON	:	73		DNA	:	3.54	NITRATE	:	1.25
NITROGEN	1	10		PROT	FINE	9.88	SILICATE	1	1.17

DISCOVERY 1981

		T 35 21.7' TE 24/05/8		L (ING 35 2	28.6°W	STATIO	ON NO. 103		
-	1	Р	ī	Р	I	Р	I	p	
	925	.16	498	.10	235	. 2A	96	.23	
	73 3	.25	22	.12	14	.21	6	.19	

P 5 1		.25		AL	PHA :	.043	BETA	,	.0001
	24,	.27	1	(.037,	.049)	(.000	1,	.0002)
SAMPLE TEM	PERA	TURE	18.0	С		INCUBA	TION TEMPERATUR	≥ F	15.5 C
CHLOROPHYLL	:	.62		RNA	:	2.85	AMMINIA	:	•11
CARRON	1	70		DNA	1	3.67	NITRATE	1	.98
NITROGEN	:	14		PROT	ETN:	16.93	STLICATE	:	. 84

DISCOVERY 1981

	T 35 21.71 TF 24/05/R		LONG 35 2	8.6'W	STATI	ОМ МО. 103 ТН 86	
1	р	ī	p	I	Р	ī	Р
877	.06	482	.20	219	.23	123	.29
49	.28	62	. 32	36	.31	24	.30
16	.25	7	. 20	4	.15	3	.12
2	.10						

PS t		. 34		AL	PHA :	.039	RETA 1		.0005
(.:	32,	.35	1	(.036,	.043)	(.000	4,	.0006
SAMPLE TEMP	ERA	TURF	18.0	c		INCURAT	ION TEMPERATUR	E	18.2 C
CHLOKUPHYLL	*	.62		RNA	1	2.85	AMMONIA	:	•11
CARRON	:	70		DNA		3.67	NITRATE	:	.98
NTTROGEN	:	14		PROT	ETNE	16.93	STLICATE	1	.94

DISCOVERY 1981

	T 35 21.7		L TNG 35 2	8.6'W	STATI	TH 86	
Ī	P	Ī	Р	I	. Р	1	Р
741	•09	518	.13	179	.15	123	•18
103	.18	48	.19	17	.16	10	•12

Þς	:		.19		AL	PHA :	.033	BETA	:	.0001
(. 1	8,	. 20	,	(.029,	.038)	(.00	01,	.0002
SAMPLE T	FMP	FRA	TURE	18.0	c		INCURAT	TION TEMPERATU	PF	2.5 C
CHLOROPHY	LL	:	.62		RNA	:	2.85	A MMONT A	:	.11
CARBON		1	70		DNA	:	3.67	NITRATE	t	.98
NITROGEN		1	14		PROT	FTNI	16.93	SILICATE	1	.84

DISCOVERY 1981

-	T 35 21.71 TE 24/05/8		LONG 35 2	9.6'W	DEP	DN NO. 103 TH 86	
Ţ	р	ī	Р	1	р	I	p
954	.09	685	.06	486	.15	267	.23
191	.27	123	.27	84	. 26	47	.27
25	.29	19	.27	11	.19	7	.13
5	.14	4	.10				

DS: .32

ALPHA 1 .027 BETA 1 .0005

(.30,	.34)	(.024,	.030)	(.0004,	.0006
SAMPLE T	LEMBERY	TURE	18.0	C		INCUBATION	TEMPER	ATURE	20.3 C
CHEUBLOHA	/LL =	.62		RNA	1	2.85	AMMUNIA		.11
CAPRON	:	70		DNA	:	3.67	NITRATE	1	.98
MITROGEN	:	14		PROT	FTN:	16.93	SILICAT	E 1	.84

DISCOVERY 1981

	AT 35 21.71M ATE 24/05/81		LNNG 35 2	8.6'W	STATI	DN NO. 103 TH 86		
1	р	ī	р	ī	P	1	Р	
737	•01	494	.03	175	.16	139	.18	
98	.27	63	.35	32	. 36	19	.27	
11	•25 •10	6	•17	3	•15	2	.10	

P	5 :	. 47		ALF	PHA I	.035	BETA		.0028
(. 4	2, .5?	•	(.032,	.039)	(.00	20,	.0036)
SAMPLE	TEMP	ERATURE	18.0	С		INCUBAT	ION TEMPERATU	RE	15.5 C
CHLOROPH	YLL	45		PNA	:	. 65	AMMINIA	1	.11
CARRON		1 65		DNA	t	2.00	NITRATE	1	.98
NITROGEN	1	1 12		PROT	FINE	-	SILICATE	1	. 84

DISCOVERY 1981

	AT 35 21.71N ATE 24/05/81		L ONG 35 2	8.6°W	STATIO	103 NO. 103		
 Ţ	p	ī	р	ī	Р	1	p	
893 66 4	.09 .39 .16	621 23 3	•14 •38 •13	215 14 2	•22 •33 •11	98 8	.33	

PS :		. 42		AL	PHA :	.043	BETA I		.0009
(.:	39,	.44)	(.03R,	.047)	(.000	7•	.0010
SAMPLE TEM	PERA	TURE	18.0	С		TNCUBAT	ION TEMPERATUR	E	18.2 C
CHLOROPHYLL	ı	. 45		RNA	1	.85	AMMONTA	1	•11
CARRON	t	65		DNA	:	2.00	NITRATE	:	.98
NITRUGEN	:	12		PROT	FIN:	-	SILICATE	:	.84

.98

.94

NITRATE

SILICATE :

DISCOVERY 1981

	LAT 35 21.7 N DATE 24/05/81		LONG 35 2	8.6'W	STATI	ON NO. 103 TH 86	
Ţ	p	ī	p	ī	Р	ī	Р
996		693 123	.12	470 98	•14 •27	. 231	.27
177	.26 .13	9	.18	5	.14	4	.13

P 5 1	•30	ALPHA I	.037	BETA 1	.0003
(.29,		(.032,	.042)	(.0003,	.0004 1
SAMPLE TEMPERAT	URF 18.0		INCUBATION	TEMPERATURE	25.0 C
CHFUBGoHAFF :	. 46	RNA 1	.85	AMMONTA :	.11

2.00

PARAMETER VALUES

DNA :

PROTETN:

MITROGEN : 12

65

CARRON

DISCOVERY 1981

	T 35 21.71		LUNG 35 2	8.6'W	STATI DEP	ION NO. 10373 PTH 86 M		
ī	р	1	P	I	Р	I	р	
90F	.13	590	.12	306	.24	207 35	.38	
23	.36 .30 .13	109	• 43 • 26	62 8	.19	6	.19	

p	: ?	.50		AL	PHA :	.027	BETA	:	.0010
(.47,	. 54)	(.024,	.031)	(.00	08,	.0012
CAMPLE	TEMPER	ATURE	18.0	С		INCUBA	TION TEMPERATU	RE	20.3 C
CHFORUPH	YLL :	.40		RNA	:	.85	AMMONIA	:	.11
CARPON	:	65		DNA	1	2.00	NITRATE	t	.98
NITPOGEN		12		PRIT	FTN:	-	SILICATE	1	. 9 4

84-

DISCOVERY 1981

P	Ţ	Р	Ţ	p	I	p
.10	617	•11	155	.34	105	•35
30	39	• 26	21	•19	14	.06
•		30 39	30 39 .26	30 39 .26 21	30 39 .26 21 .19	30 39 .26 21 .19 14

PS :		. 43		AL	PHA :	.013	BETA :		.0008
	30,	.46	1	(.011,	.014)	(.000	6,	.0010
SAMPLE TEM	PFRA	TURE	18.0	С		INCUBAT	ION TEMPERATUR	E	15.0 C
CHLOROPHYLL	1	.90		RNA	:	2.65	AMMINIA	:	.26
CARPON	1	129		DNA	1	5.18	NITRATE	1	.36
NITPHEFN	:	15		PROT	FTN:	14.80	SILICATE	:	.43

DISCOVERY 1981

	T 34 31.2' TE 25/05/8		LONG 35 1	8.9'W	STATI	TH 60	
1	P	ī	P	ı	Р	I	р
869	.06	510	•11	223	.28	151	•34
96	.31	71	.30	35	. 33	22	.34
14	.24	8	.12	4	.11	3	.07
2	.05						

ALPHA 1 .026

PS 1 .40

BETA : .0009

(• 3	37,	.44)	(.022,	.029)	(.0006,	.0011
SAMPLE T	FMI	PERA	TURE	18.0	С		INCUBATI	UN TEMPER	ATURF	17.8 C
CHLUSUPHY	'nι	1	.90		RNA	1	2.65	AMMONTA		.26
CARBUN		:	128		DNA	:	5.18	NITRATE	:	.36
NITPHEEN		:	1.5		PRNT	FINE	14.80	STLICAT	E 1	.43

DISCOVERY 1981

	T 34 31.21 TF 25/05/8		LONG 35 1	8.9'W		STATION NO. 10375 DEPTH . 60 M		
1	p	Ţ	Р	1	р	I	Р	
813	.03	645	.08	275	.17	167	.24	
AA	. 25	52	.23	25	.15	16	.14	
7	.10	5	.08	4	.06	3	.05	

	PS:		.32		AL	PHA :	.011	BETA	:	.0006
(29,	.36)	(.010,	.013)	(.00	06,	.0010
CAMPLE	LÉW	PFRA	TURE	18.0	С		INCUBAT	TION TEMPERATU	RE	24.2 C
CHLOPOP	НАГГ	:	.90		RNA	t	2.65	4 INUMM 4	1	.26
CARRON		:	129		DNA	:	5.18	NITRATE	1	.36
NITPOGE	N	1	15		PRIT	ETNE	14.80	SILICATE	1	.43

DISCOVERY 1981

	T 34 31.2 TF 25/05/8		L ONG 35 1	8.9'W	STATI	ON NO. 103 TH 60	
Ţ	р	1	p	I	Р	1	p
733	.07	558	.14	255	.24	179	.28
123	.35	87	.33	44	. 29	27	.29
18	.26	10	.14	7	.10	5	.08
4	.07						

p ? :		.42		AL	PHA :	.019	BETA I	!	.0009
(.3	39,	.44)	(.017,	.020)	(.000	7,	.0011
SAMPLE TEMP	PERA	TURE	18.0	С		INCURATI	IN TEMPERATUR	E	21.0 C
CHEUbubhari	:	.90		RNA	1	2.65	AMMONTA	1	.26
CARBON	:	128		DNA	:	5.18	NITRATE	:	.36
HITOUGEN	:	15		PRNT	ETNI	14.80	SILICATE	1	.43

LAT 34 31.2'N DATE 25/05/81			L NG 35 1	8.9'W	STATION NO. 10375 DEPTH 60 M		
ī	р	J	Р	ī	Þ	1	P
713	.06	462	.13	199	.41	159	.44
113	.52	79	.45	34	. 35	18	.29
12	.19	6	•10	3	•11	3	.09

			PA	RAMETE	R VALUES			
bc t		.82	AL	PHA :	.018	BETA	:	.0030
٠.	71,	.92 1	(.016,	.020)	(.00	22,	.0039)
SAMPLE TEM	PERA	TURE	18.0 C		INCUBAT	ION TEMPERATU	RE	15.0 C
CHLOROPHYLL	:	.60	KNA	:	1.94	AMMONTA	:	.26
CARRIN	1	42	DNA	:	2.19	NITRATE	t	.36
NITROGEN	1	11	PROT	EINI	-	SILICATE	ı	.43

-89-

BETA : .0018

DISCOVERY 1981

	T 34 31.2 N TF 25/05/81		L UNG 35 1	8.9'W	STATIO	N ND. 103	75 M	
Ţ	р	Ţ	Р	I	Р	I	р	
617	.14	207	.31	155	.49	97	.53	
72	.51	27	.45	19	.38	1.5	.30	
6	.19	4	.15	2	.15	5	.11	

PARAMETER VALUES

ALPHA : .033

.55

P :

(.60,	.72)	(.029,	.036)	(.00	012,	.0023)
SAMPLE TE	MPERA	TURE	16.0 C		INCURATION	N TEMPERATI	J.R.E.	17.9 C
CHLOROPHYL	L	.60	PNA	1	1.94	AMMONIA	1	.26
CARRON	1	42	DNA	1	2.19	NITRATE	ı	.36
NTTROGEN	:	11	PRO	TETN:	-	SILICATE	:	.43

DISCOVERY 1981

	AT 34 31.2 ATF 25/05/8		1.0NG 35	18.9°W	STATI	ON NO. 103	75 M	
1	р	Ţ	P	I	Р	I	р	
745	• 08	490	.13	. 239	.31	104	.33	
76	.35	40	.31	24	.22	15	.22	

PARAMETER VALUES PS : .38 ALPHA : .025 BETA : .0007 (.34, .43) (.020, .029) (.0005, .0016) SAMPLE TEMPERATURE 18.0 C INCUBATION TEMPERATURE 24.2 C CHURDPHYLL : .60 RNA : 1.94 ANMONIA : .26 CARRON : 42 DNA : 2.19 NTTRATE : .36 NUTPOGEN : 11 PROTEIN: - SILICATE : .43

DISCOVERY 1981

	AT 34 31.20 DATE 25/05/8		LANG 35 1	8.9'W	STATI	TH 60	
1	p	Ţ	р	I	Р	1	р
789	.10	582	.25	267	.43	191	.49
123	.53	86	.42	49	.39	31	. 44
20	.38	11	. 21	7	.19	5	•13

05	:	. 5 B		AL	PHA :	.026	BETA	:	.0009
(.52.	. 53	1	(.022,	.030)	(.00	06,	.0012
CAMPLE TE	MPERA	TURE	19.0	c		INCUBAT	ION TEMPERATU	RE	21.0 C
CHLOROPHYL	.L :	.60		RNA	:	1.94	AMMONTA	:	.26
CAPRON	:	42		DNA	:	2.19	NITRATE	ı	.36
NITPUGEN	1	11		PROT	ETNI	-	SILICATE	1	.43

DISCOVERY 1981

	TE 26/05/9		LONG 33 2	9.0'W	STATIO	ON NO. 103	76 M
Ţ	Р	ī	р	I	P	I	p
885 81	.08 .29	617 39 4	•19 •31 •09	243 21 3	•24 •27 •06	105 14 2	•29 •20 •03

PS : .33 ALPHA : .025 BETA : .0004

(.32,	.35	1	(.022.	.027)	(.0004,	.0005
SAMPLE TE	MPERA	TURE	19.0	С		INCUBATION	TEMPER	ATURE	15.0 C
CHLOROPHYL	.1 :	. 38		RNA	1	1.98	AMMONIA	1	.13
CARRON	1	43		DNA	1	2.70	NITRATE	1	.32
NITRUGEN	:	-		PROT	FTN:	18.45	STLICAT	E .	1.06

DISCOVERY 1981

	T 33 34.2' TE 26/05/8		1.0NG 33 2	8.0'W	STATIO	DN NO. 103 TH 45	
ī	р	Ţ	р	I	р	I	Р
969	.07	F10	•20	151	• 23	96	4.0
71	.36	35	.29	22	. 28	14	.40
8	. 15	4	.08	3	.04	2	.01

P5 :		.41		AL	PHA 1	.022	BETA	ı	.0007
	37,	.45)	(.018,	.026)	(.00	05,	.0010)
SAMPLE TEM	PERA	TURE	19.0	С		INCUBA	TION TEMPERATU	RF	19.0 C
CHLÜRGBHALF	ı	. 44		RNA	1	1.98	AMMONIA	1	.13
CARBON	:	43		DNA	:	2.70	NTTRATE	:	.32
NITROGEN	:	-		PROT	ETN:	18.45	SILICATE	:	1.36

DISCOVERY 1981

LAT 33 34.21N DATE 26/05/81			LUNG 33 28.0°W			STATION NO. 10376 DEPTH 45 4		
I	DATE 26/0-/61	1	p	1	Р	1	p	
913 114	.39	645 25 4	.18 .37 .13	275 16 3	.27 .34 .13	167 7	.29	

						VALUE S			
				PARA	METER	VALUES			
05 :		.41		ALPH	4A :	.043		Α:	.0005
(.3	9,	.43)	(.039,	.047)	(.	0005,	.0006
CAMPLE TEMP	PERA	TURE	19.0	С		THEUBATION	TEMPER	ATURE	24.0 C
		.38		RNA	:	1.98	AMMONIA	1	.13
HLORUPHYLL	•	. 30					NITRATE		.32
CARBON	:	43		DNA	:	2.70	ATIVALE		
NITROGEN	ı	-		PROTE	TNI	18.45	SILICAT	E 1	1.06

DISCOVERY 1981

L	AT 33 34.20	11	L UNG 33 2	29.0'W	STATI	ON NO. 103	
1	Р	Ī	р	I	P	1	р Р
733 F7 7	. 2? . 40 . 21	?55 27 5	• 34 • 45 • 10	179 18 4	.39 .28 .02	123	•39 •21

				PA	RAMETE	R VALUES		
Þ¢	:	•46			рна :	.029	BETA :	.0005
(42,	• 51)	(.024,	.033)	.0003	
SAMPLE TEN	PERA	TURE	19.0	С		TNCURA	TION TEMPERATURE	22.0 C
CALUDODDHAFI	:	• 38		RNA	1	1.98	AMMONIA	.13
CARPON	ı	43		DNA	1	2.70	NITRATE	
MITROCEM	:	-		PROTE	TN:	18.45	STLICATE	• 12

DISCOVERY 1981

	T 33 34.2' TE 26/05/8		LONG 33 2	8.0'W	STATI	ON NO. 103 TH 45	
ī	Р	Ī	р	I	P	I	P
713	.08	462	.20	199	.43	159	.55
113	.60	79	.66	34	. 40	18	.35
12	.07	6	.11	3	.11	3	.08

05 1		98	ALP	HA I	.027	BE	TA E	.0036
(.	R, 1	.09)	(.020,	.023)	(.0027,	.0044)
SAMPLE TEM	PERATU	PE 19.0	С		INCURATION	TEMPER	ATURE	15.0 C
CHLUB @ PAALT		51	RNA	1	1.69	AINONNIA	1	.13
CARRON	:	90	DNA	:	2.38	NITRATE	:	.32
NTTROGEN	:	21	PROTE	IN:	9.45	SILICAT	E 1	1.06

DISCOVERY 1981

	T 33 34.2!N TE 26/05/81		LUMB 33 5	8.0°W	STATION DEPTH		10376 45 M	
 Ţ	р	Ţ	Р	Ţ	р	Ţ	Р	
617	.32	207	•71	155	.81	9	.77	
72	.77	2.7	.56	19	.35	1	.34	

PS:		1.04		ALP	PHA :	.029	BETA	1	.0019
(.9	7,	1.11)	(.027,	.031)	(.00	5,	.0024)
SAMPLE TEMP	PFRA	TURE	10.0	С		TNCURATION	N TEMPERATU	RE	19.0 C
CHEDKUDHAIF	:	.51		RNA	:	1.69	AMMONIA	:	.13
CARRON	:	80		DNA	1	2.39	NITRATE	1	.32
NITROGEN	1	21		PROTE	ETNI	9.45	SILICATE	1	1.06

98-

DISCOVERY 1981

	T 33 34.21 TF 26/05/8		LUNG 33 2	O . M	STATIO	N NO. 103	76 M	
Ţ	р	Ţ	Р	I	P	ī	Р	
745	.35	400	.37	239	.59	151	•60	
76	. 54	40	.32	24	. 35	15	.30	
7	.18	5	•18	3	.13	3	.11	

PARAMETER VALUES ALPHA: .020

BETA : .0006

(• 5	7,	• 74)		.017,	.024)	(.0	003,	.0009
CAMPLE T	EMP	ERA	THRE	19.0	٢		INCUBATI	ION TEMPERAT	URE	24.0 C
CHLOROPHY	Ll	t	.51		RNA	:	1.69	AMMONIA	1	.13
CAPRON		1	An		DNA	ı	2.38	NTTRATE	1	.32
NITSUCEN		:	21		PROT	TETN:	9.45	SILICATE	1	1.06

PS: .65

DISCOVERY 1981

	AT 33 34.21		LONG 33 2	8.0°W	STATI	ON NO. 103 TH 45	
J	Р	J	Р	1	Р	I	P
769 96	·25	582	.44	267	.71	123	.75
11	.24	7	.19	5	.15	4	.12

DA	DA	1 54	2	т	ED	V	A I	1115	. 5

BETA : .0016

(97,	1.08)	(.023,	.026)	(.0014,	.0018
SAMPLE TE	MPFRA	TURE	19.0	С		INCUBATION	TEMPER	ATURE	22.0 C
CHLUBUOHAI		.51		RNA	t	1.69	AMMUNIA	1	.13
CARRON	:	68		DNA	:	2.38	NITRATE	:	.32
изтопени	:	?1		PROT	FIN:	9.45	SILICAT	F t	1.06

PS: 1.02 ALPHA: .024

DISCOVERY 1981

	T 33 10.91		LONG 33 2	2. 1. M	DEP	TH 87	
I	Р	Ţ	р	I	Р	1	Р
693	.07	490	.05	199	.14	118	.19
92	.21	12	.20	6	.14	3	.05
2	. 05	2	.04				

D5 :		.30		AL	PHA :	.026	BETA	:	.0011
	28,	. 33)	•	.024,	.028)	(.000		
CAMPLE TEM	PER	ATURE	21.0	С		INCUBAT	ION TEMPERATU	RE	16.0 C
CHLOROPHYLL	•	1.20		RNA	:	3.78	AMMONIA	:	.69
CARBUN	t	57		DNA	1	6.82	NITRATE	:	1.15
NITROGEN	1	14		PROT	EIN:	26.09	SILICATE	ı	1.12

DISCOVERY 1981

	T 33 10.91 TE 27/05/A		[UNG 33 2	2.7'W	DEP	ON NO. 103 TH 87	
ī	p	J	P	I	p	I	P
964	.02	621	.03	446	.07	183	.13
123	.13	90	.08	66	.09	30	.04
16	.03	11	.03	5	.04	3	.03

DS 1		.35		٨L	PHA 1	.002	BETA	1	.0012
(23,	.93)	(.002,	.003)	(00	18,	.0043
SAMPLE TEM	DEB	ATURE	21.0	c		INCUBATIO	N TEMPERATU	RE	19.0 C
CALOSUBAAFI	1	1.20		RNA	1	3.78	AMMINIA	t	.69
CARRON	:	57		DNA	:	6.82	NITRATE	:	1.15
NITROCEN	:	14		PROT	ETNI	26.09	STLICATE	t	1.12

